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ABSTRACT

Risk taking is a natural part of teenagers' lives. They need to take some risks in order to grow. However, they can also get into trouble with their risk taking when it involves behaviors such as sex, drinking, smoking, violence, and drug use. Interest in the role that decision making plays in adolescents' involvement in high-risk behaviors led the Office of the Assistant Secretary of Planning and Evaluation of the U.S. Department of Health and Human Services to request the Board on Children, Youth, and Families to convene a workshop on adolescent decision making. This booklet summarizes the workshop, held on January 6-7, 1998, which was designed to pull together the diverse perspectives that researchers and practitioners have adopted in regard to adolescent decision making. It provides a brief overview of decision theory and how decision theory might be applied to adolescent behavior. It next considers cognitive, social, affective, and institutional factors that may influence effective decision making. The role of the media is briefly explored, followed by information on several youth development and prevention programs. Finally, the report summarizes issues that were raised throughout the workshop that might be important to the design and implementation of programs for youth. (Contains 80 references.) (MKA)

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Adolescent DECISION MAKING

Implications for Prevention Programs

SUMMARY OF A WORKSHOP

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Adolescent DECISION MAKING

Implications for Prevention Programs

SUMMARY OF A WORKSHOP

Baruch Fischhoff, Nancy A. Crowell, and Michele Kipke, Editors

Board on Children, Youth, and Families

Commission on Behavioral and Social Sciences and Education
National Research Council

Institute of Medicine

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Preface

Risk taking is a natural part of teenagers' lives. They need to take some risks in order to grow, trying new activities, generating new ideas, experimenting with new roles. However, they can also get into trouble with their risk taking when it involves behaviors such as sex, drinking, smoking, violence, and drug use. Concern over such "risk behaviors" has led to the creation of many interventions, based to varying degrees on the growing scientific literature on adolescent development. Some of these interventions have attempted to manipulate teenagers' beliefs, values, and behaviors, hoping to get them to act more cautiously. Other interventions have attempted to improve their ability to make sensible decisions, hoping to get them to make wise choices on their own. Having general decision-making skills might enable teenagers to protect themselves in many situations.

Interest in the role that decision making plays in adolescents' involvement in high-risk behaviors led the Office of the Assistant Secretary of Planning and Evaluation of the U.S. Department of Health and Human Services to request the Board on Children, Youth, and Families to convene a workshop on adolescent decision making. The Board on Children, Youth, and Families is a joint activity of the National Research Council (NRC) and the Institute of Medicine. A workshop was held on January 6-7, 1998, to examine what is known about adolescents' decision-making skills and the implications of that knowledge for programs to further their healthy development.

The workshop was designed to pull together the diverse perspectives that researchers and practitioners have adopted, when looking at adolescent decision making. In order to provide a common frame of reference, the workshop used a decision-theory perspective as an organizing device. The many distinguished presenters described their evidence in terms of teenagers' ability to make effec-

tive decisions. Some presenters focused on decision making as a cognitive process. Others considered social, affective, and institutional barriers to sound decision making. Still others dealt with concurrent individual and cultural changes that affect teenagers' ability to act in their own best interests.

The ensuing discussions revealed the need to integrate these different perspectives as a necessary step to helping teenagers to deal with the many difficult choices that they face. This necessity also creates opportunities for novel research collaborations, both among basic researchers and between scientists and practitioners. A common lament was the frequent gap between research and practice: programs don't always reflect current research, and they often aren't evaluated at all, or at least not in terms that will inform theory. Perhaps the workshop encouraged some of the dialogue needed to bridge research and practice, giving teenagers all the help that we, collectively, can muster.

As this activity was getting under way, the Forum on Adolescence was being launched by the Board on Children, Youth, and Families. The forum provides an interdisciplinary, nonpartisan focal point for taking stock of what is known about adolescent health and development, applying this knowledge base to pressing issues facing adolescents, and stimulating new directions for innovation and scientific inquiry. Forum members, several of whom were instrumental in the planning of the workshop, include: David Hamburg (*Chair*), president emeritus, Carnegie Corporation of New York; Huda Akil, Mental Health Research Institute, University of Michigan; Cheryl Alexander, School of Hygiene and Public Health, The Johns Hopkins University; Claire Brindis, Institute for Health Policy Studies, University of California, San Francisco; Camille Zubrinsky Charles, Population Studies Center, University of Pennsylvania; Greg Duncan, Institute for Policy Research, Northwestern University; Jacquelynne Eccles, Institute for Social Research, University of Michigan; Abigail English, Adolescent Health Care Project, National Center for Youth Law, Chapel Hill, NC; Eugene Garcia, School of Education, University of California, Berkeley; Helene L. Kaplan, Skadden, Arps, Slate, Meagher, and Flom, New York, NY; Iris Litt, School of Medicine, Stanford University; John Merrow, The Merrow Report, New York, NY; Anne Petersen, W.K. Kellogg Foundation, Battle Creek, MI; Karen Pittman, International Youth Foundation, Takoma Park, MD; Anne Pusey, Jane Goodall Institute's Center, Department of Ecology, Evolution, and Behavior, University of Minnesota; Michael Rutter, Institute of Psychiatry, University of London; Stephen Small, Department of Child and Family Studies, University of Wisconsin, Madison; and Beverly Daniel Tatum, Dean, Mount Holyoke College.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness

to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

We thank the following individuals for their participation in the review of this report: John H. Flavell, Department of Psychology, Stanford University; Iris Litt, School of Medicine, Stanford University; Eugene Oetting, Triethnic Center, Colorado State University; Cheryl L. Perry, School of Public Health, University of Minnesota; and Stephen Small, Department of Child and Family Studies, University of Wisconsin, Madison.

Although the individuals listed above have provided constructive comments and suggestions, it must be emphasized that responsibility for the final content of this report rests entirely with the authoring committee and the institution.

Many individuals deserve recognition for their contributions to the workshop and report. Michele Kipke, director of the Forum on Adolescence at the time of the workshop (she has since assumed the position of director of the Board on Children, Youth, and Families), and Nancy Crowell, staff officer for this workshop, spent long hours discussing the workshop agenda and potential presenters with experts in the field. The workshop would not have taken place without their efforts. The workshop presenters provided the basis of this report; their names are listed in the appendix. Many thanks are owed to editor Christine McShane for making the report more readable.

The workshop and this report were funded by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) of the U.S. Department of Health and Human Services. We are grateful to Ann Segal, Elisa Koff, Emily Novick, and Matt Stagner within ASPE for their support and contributions to this effort.

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Adolescent Decision Making: Implications for Prevention Programs

INTRODUCTION

Adolescence is frequently described as a time of engaging in risk-taking behaviors. In 1996, 45 percent of high school seniors reported having tried marijuana, 30 percent reported being drunk in the past two weeks, and 22 percent reported smoking cigarettes daily (U.S. Department of Health and Human Services, 1997). Nearly two-thirds of U.S. teenagers reported initiation of sexual intercourse prior to high school graduation (Centers for Disease Control and Prevention, 1996), and they experience a high number of sexually transmitted diseases (Institute of Medicine, 1996) and unintended pregnancies (U.S. Department of Health and Human Services, 1997). Adolescents are involved in a disproportionate number of automobile accidents (National Committee for Injury Prevention and Control, 1989). In the past 10 years, violence among adolescents has increased to the point that homicide is the second leading cause of death among young people (Singh et al., 1996).

Adolescents' involvement in risk-taking behaviors has been explained in a number of ways. Some researchers suggest that teenagers tend to be especially high in sensation seeking (Zuckerman et al., 1978). Others suggest that they use these behaviors to appear more mature (Jessor, 1987) or because they have heightened egocentrism (Elkind, 1985). Many authors (e.g., Arnett, 1992; Jessor, 1987; National Research Council, 1993) attribute these behaviors to a combination of individual, social, and environmental factors. One of these factors that has received much research attention in recent years is adolescent decision making.

Interest in the role that decision making plays in adolescents' involvement in high-risk behaviors led the Office of the Assistant Secretary for Planning and

Evaluation of the U.S. Department of Health and Human Services to request the Board on Children, Youth, and Families to convene a workshop on adolescent decision making. The Board on Children, Youth, and Families is a joint activity of the National Research Council and the Institute of Medicine. A two-day workshop was held on January 6-7, 1998, to (1) identify and discuss the major findings from the last decade of research on adolescent decision making, particularly as they relate to high-risk behavior among adolescents; (2) discuss the research on efforts to intervene in adolescent high-risk behaviors; and (3) highlight the implications of this research for interventions to reduce high-risk behavior among the nation's youth, particularly in the areas of substance abuse and sexuality. The workshop brought policy makers and service providers together with researchers studying adolescent decision making, individuals evaluating programs to prevent high-risk behaviors, and advertising professionals developing materials aimed at teenagers. Using decision theory as a framework, the workshop presentations examined who adolescents are as decision makers, the kinds of decisions they face, the contexts in which those decisions must be made, and the kinds of supports adolescents need in order to make decisions that are consistent with healthy development.

This report summarizes the discussions held at the workshop. It provides a brief overview of decision theory and how decision theory might be applied to adolescent behavior. The report next considers cognitive, social, affective, and institutional factors that may influence effective decision making. The role of the media is briefly explored, followed by information on several youth development and prevention programs. Finally, the report summarizes issues that were raised throughout the workshop that might be important to the design and implementation of programs for youth.

The report is not intended to provide a complete review of decision theory, adolescent development, or program evaluation literature. General theories of adolescent development were mentioned only in passing in the workshop and therefore are not covered in this report. The workshop did not cover adolescent ego development or adolescent moral development, nor did it deal with adolescents as sensation seekers. Finally, the workshop did not examine all types of youth development and prevention programs. Rather than a comprehensive overview, this report should be seen as a reflection of ideas of the workshop presenters that may spur new research and more collaboration between researchers and service providers.

THE DECISION-MAKING FRAMEWORK

Decision theory describes the steps involved in making any decision, including recognizing that a decision must be made, understanding the goals that one hopes to attain, making a list of options, determining the consequences--both positive and negative—of each option, determining the desirability of each con-

sequence, evaluating the likelihood of each consequence, and integrating all the information. The entire process occurs within a context or situation that may influence the options available and their consequences. Workshop chair Baruch Fischhoff, professor of social and decision sciences and of engineering and public policy at Carnegie Mellon University, explained some of the benefits to thinking about decision making from this perspective. Decision theory provides a common descriptive framework for describing how people actually make decisions, for comparing what people actually do with what they could conceivably do under ideal circumstances, and for uncovering ways to help people improve their decision-making skills.

In real life, people often make choices out of habit or tradition, without going through the decision-making steps systematically, Fischhoff noted. Decisions may be made under social pressure or time constraints that interfere with a careful consideration of the options and consequences (Reason, 1990). Decisions may be influenced by one's emotional state at the time a decision is made (Plous, 1993). When people lack adequate information or skills, they may make less than optimal decisions (Fischhoff, 1992b). Even when people have time and information, they often do a poor job of understanding the probabilities of consequences; even when they know the statistics, they are more likely to rely on personal experience than information about probabilities (National Research Council, 1989).

Most of the research about decision making has been done with adults.[1] To what extent can the research findings be applied to adolescents? Box 1 lists some of the questions that need to be answered for each step in the decision-making process in order to apply this framework to adolescents. Box 2 presents Fischhoff's speculative answers to the questions.

People cannot decide to follow a course of action if they have not considered that action as an option. Many programs for adolescents are designed to expand their range of options, yet very few researchers have studied how adolescents—or adults—generate options (Beyth-Marom and Fischhoff, 1997). One study of adolescent girls' contraceptive practices found that they equated birth control with the pill and therefore did not consider other forms of birth control as options (Rogel et al., 1980). In-depth interviews with adolescent girls about tough decisions they had made revealed that they often saw only one either-or choice rather than a series of options (Beyth-Marom and Fischhoff, 1997).

More research has focused on how people view the consequences of various options than on option generation itself. Research suggests that, from the age of about 12 or 13, young people are similar to adults in their ability to identify and evaluate possible consequences of engaging in risky behaviors (Beyth-Marom et

[1]Overviews of research on adult decision-making processes can be found in Ableson and Levi (1985), Fischhoff (1988), Fischhoff et al. (1987), Slovic et al. (1988), and von Winterfeldt and Edwards (1986).

BOX 1 APPLYING DECISION THEORY TO ADOLESCENTS' PROBLEM BEHAVIORS

- OPTIONS
  - Do teenagers see the options that adults see?
  - Do teenagers see the options as feasible for them?
  - Are teenagers looking at multiple options concurrently?
- CONSEQUENCES
  - Are teenagers aware of the consequences?
  - Do teenagers value what adults value?
  - Can teenagers predict their own future tastes?
- FACTS AND UNCERTAINTIES
  - Do teenagers know what the facts are?
  - Can teenagers appreciate the quality of their information?
  - Can teenagers appreciate the range of probabilities and magnitudes?
- INTEGRATION
  - Can teenagers integrate multiple kinds of information?
  - Do teenagers know the rules for integration?
  - Do teenagers give disproportionate weight to particular considerations?
- SITUATION MANAGEMENT
  - Do teenagers control the situations in which choices can be made?
  - Can teenagers control themselves in risk situations?
  - Do teenagers short-circuit the decision-making process?

al., 1993; Office of Technology Assessment, 1991). Teenagers are slightly more likely than adults to list social consequences of engaging in or avoiding a risky behavior (Beyth-Marom et al., 1993). Teenagers also report engaging in behaviors that they describe as more likely to have positive than negative consequences (e.g., Bauman et al., 1988; Gilbert et al., 1986; Haveman et al., 1997).

In the decision-making framework, Fischhoff explained, not only does one need to recognize consequences, but also one must determine the likelihood that a consequence will occur. Adolescents' involvement in risky behaviors has often been attributed to their thinking of themselves as invulnerable—as thinking that bad consequences will not happen to them. Research shows that they are no more likely than adults to see themselves as invulnerable (Cohn et al., 1995; Quadrel et al., 1993). That is not to say that adults do a good job of estimating probabilities

BOX 2 SPECULATIONS ABOUT ADOLESCENTS' DECISION MAKING

- OPTIONS
  - Teenagers think a lot about ways out of their dilemmas
  - Teenagers may lack the substantive knowledge needed to come up with options
  - Teenagers may lack the sense of control needed to create options
- CONSEQUENCES
  - Teenagers may get more benefit from some risk behaviors than adults do
  - Teenagers may discount future consequences more than adults do
  - Teenagers may fail to appreciate unfamiliar experiences
- FACTS AND UNCERTAINTIES
  - Teenagers know what they have had a chance to learn
  - Teenagers have a limited appreciation of the limits of their own knowledge
  - Teenagers have difficulty interpreting the meaning and credibility of information
- INTEGRATION
  - Teenagers may favor simpler decision rules than adults
  - Teenagers may have fewer examples of decision-making processes to follow than adults
  - Teenagers are no more likely than adults to think themselves invulnerable
- SITUATION MANAGEMENT
  - Teenagers lack control over critical aspects of their lives
  - Teenagers have control over situations they do not adequately understand
  - Teenagers may be more influenced by emotions than adults

of the likelihood of their experiencing negative consequences. Numerous studies have found that adults tend to see themselves as less likely than others to experience negative outcomes and more likely to experience positive ones (Baumhart, 1968; Finn and Bragg, 1986; Johnson and Tversky, 1983; Larwood and Whitaker, 1977; Perloff, 1983; Svenson, 1981; Weinstein, 1987; Whitely and Hern, 1991). Young people favor their own experience and anecdotal evidence over probabi-

listic information in making decisions, particularly about social situations, as do adults (Jacobs and Potenza, 1991).

Adolescence is a time of physical, cognitive, social, and emotional growth and change. Workshop presenter Lawrence Cohn, associate professor of psychology at the University of Texas at El Paso, discussed adolescent cognitive development and its potential implications for decision making. It is generally asserted that, during adolescence, there is an increasing capacity for abstract reasoning, counterfactual reasoning, reasoning from premises that are not true, systematic reasoning, and a growing capacity for probabilistic reasoning. These abilities are all relevant to decision making. An increased ability to grasp the concept of probability should encourage a more realistic understanding of the chance of various outcomes occurring. An increased capacity for systematic reasoning should provide teenagers with the ability to imagine future outcomes and transpose them into the present, thereby enabling them to assess the consequences of their actions. An increased ability to coordinate independent pieces of information should encourage teenagers to attend to all relevant aspects of choices.

Adolescents' social cognition—the way they think about their social world, the people they interact with, and the groups they participate in—may differ from that of adults and influence their decision-making skills. Workshop presenter Janis Jacobs, associate professor of human development and family studies and psychology at Pennsylvania State University, mentioned three key ways in which mastering knowledge about the social world differs from other cognitive skills (Jacobs and Ganzel, 1993). First, social outcomes are generally uncertain, so that the best reasoning and decision making does not guarantee the best social outcomes and poor reasoning does not guarantee a bad social outcome. Second, information about relationships and social events often must be inferred over a long period of time. Third, the social world is constantly changing. As children enter adolescence, they are exposed to a greater variety of adults and peers, and they are gaining greater autonomy. Adolescents make important decisions under the set of circumstances in which we know adults have the greatest difficulty: unfamiliar tasks, choices with uncertain outcomes, and ambiguous situations.

Jacobs also noted that she has found different styles of decision making in two studies (Jacobs, 1998; Jacobs and Potenza, 1990). Some people prefer to gather information and carefully weigh different options. Others say that they prefer to rely on intuition and make snap decisions. A third group is inconsistent in their strategies and report high levels of indecision. In both studies, the first two groups thought of themselves as good decision makers, but 7th and 8th graders who made snap decisions were more likely to be involved in risky behaviors than those who carefully weighed options and evaluated consequences.

There may be other differences between adolescents and adults that may also influence the way they make decisions. Cohn noted that teenagers see occasional or experimental involvement in health-threatening activities as less dangerous than do their parents. Compared with their parents, teenagers perceive less risk in

occasionally drinking alcohol, getting drunk, or smoking cigarettes. Notably, however, they do recognize that frequent involvement in these activities places them at greater risk for harm (Cohn et al., 1995). Some evidence suggests that teenagers also misperceive independent risks as cumulative, that is, they think that one must be exposed to a hazard a number of times before experiencing negative consequences. An example of this reasoning is the pregnant adolescent who did not think she could get pregnant the first time. Cohn noted that adolescents may also overestimate their ability to recognize and avoid dangerous situations.

Workshop presenter Reed Larson, professor of human and community development and psychology at the University of Illinois, Urbana-Champaign, explained the role that emotions may play in adolescent decision making. Emotions affect how people think and behave and influence the information people attend to. When people are experiencing positive emotions, they tend to underestimate the likelihood of negative consequences to their actions; when they are experiencing negative emotions, they tend to focus on the near term and lose sight of the big picture. Both adolescents' and adults' decision-making abilities are influenced by emotions. Larson's research has found that adolescents experience more emotions, in general, than do adults (Larson et al., 1980; Larson and Richards, 1994).[2] About one-quarter to one-third of adolescents' strong emotions—both positive and negative—are tied in some way to real or fantasized romantic emotions (Larson and Asmussen, 1991).

Another factor that may influence the decisions adolescents make, according to workshop presenter Elizabeth Cauffman, postdoctoral fellow at the Center on Adolescence at Stanford University, is their level of maturity of judgment. In her research, maturity of judgment encompasses three dimensions: responsibility—being self-reliant and having a healthy sense of autonomy; perspective—taking the long-term view and concern for others; and temperance—being able to limit impulsivity and exercise self-control. The less mature a young person was rated in the study, the more likely he or she was to choose a less "responsible" option (such as shoplifting, smoking marijuana, etc.). In general, Cauffman's research found that maturity was curvilinearly related to age; that is, maturity level was high among 6th graders, dropped to its lowest level among 10th and 11th graders, then began increasing into young adulthood, when it plateaued. She also found that girls generally were more mature than boys at a given age. However, the level of maturity of judgment was a better predictor of choosing a "responsible" option than was age. For example, a mature 15-year-old was more likely to make

[2]Experimental work in brain imaging by Deborah Yurgelun-Todd suggests that adolescents may process emotions in the part of the brain responsible for instinct and gut reactions (the amygdala), whereas adults process emotions in the frontal section—the part of the brain associated with rational reasoning (*Boston Globe*, 1998). This suggests a physiological maturation of the brain that continues throughout adolescence.

a "responsible" decision (such as not smoking marijuana, not shoplifting, etc.) than an immature 24-year-old (Steinberg and Cauffman, 1996).

THE WORLD OF ADOLESCENCE

Adolescents spend twice as much time with peers as with parents or other adults (Csikszentmihalyi and Larson, 1974), and adolescent peer groups function with much less adult supervision than do childhood peer groups (Brown, 1990). The relative importance of peer group influence versus family influence on adolescents has been the subject of controversy. Researchers have found that susceptibility to peer influence is higher among early adolescents than among older adolescents (Berndt, 1979; Bixenstine et al., 1976; Collins and Thomas, 1972; Costanzo and Shaw, 1966) and is negatively correlated with their confidence in their social skills (Costanzo, 1970). Some research indicates that parents can be trained to increase their influence over their adolescents' behavior (Jaccard and Dittus, 1990, 1993).

The popular notion of the reluctant teenager being pressured into trying a risky behavior by friends may be overly simplistic, reported workshop presenter Kathryn Urberg, associate professor of psychology at Wayne State University. It appears that adolescents select their closest friends on the basis of similar interests, as do adults; young people tend to have two to four best friends who are very similar to themselves. It is unusual for a young person who does not use cigarettes or alcohol to select a close friend who does use, according to Urberg. Even when a nonusing adolescent has a best friend who uses cigarettes or alcohol, Urberg's research found that the role played by peer influence was relatively small and was mediated by family factors, such as parental monitoring (Urberg et al., 1997). Other researchers have found that peer pressure accounts for between 10 and 40 percent of the variations in adolescents' smoking and drinking behavior (Bauman and Fisher, 1986; Krosnick and Judd, 1982). For drug use, the relative importance of the influence of friends and parents appears to vary by drug, with friends being the critical influence on marijuana use (Glynn, 1981). Peer selection rather than peer influence may be the more important factor for initiation of risky behaviors, and peer influence may be important to maintenance of risky behaviors, Urberg noted. Thus it is important to understand both the decisions that young people make in selecting friends and the role that those friends play in decisions about attitudes and behaviors.

Larson pointed out that young people report feeling bored much of the time, but they report feeling very happy and motivated when with their friends. From a systems theory perspective, groups that provide a lot of positive feedback—such as young people report experiencing with their friends—encourage action to maintain the good feelings; those actions could entail engaging in risky behaviors to keep the fun going.

Peers may exert indirect or passive influence on adolescents. Workshop

presenter James Jaccard, professor of psychology at the University at Albany, State University of New York, noted that young people may be influenced as much by what they think their peers are doing as by what they really are doing (Radecki and Jaccard, 1995). A young person may think that everyone is smoking or everyone is sexually active and may therefore feel pressure to try those behaviors.

Workshop presenter Jacquelynne Eccles, professor of psychology, women's studies, and education at the University of Michigan, reported on work she and her colleagues have done on the extent to which young people engage in activities that fit into the image of the kind of person they want to be (Eccles and Barber, 1999). This image, or self-schema, may also influence the meaning of engaging in risky behaviors. In this research, a group of high school students who are involved in student activities and organized school athletics tended to have high alcohol use, although they were doing well in school and had a high likelihood of going to college. A second group of young people engaged in similar amounts of alcohol consumption but were also engaged in other risky behaviors and were doing poorly in school. A third group was highly anxious beginning around 6th grade; they became increasingly anxious as they proceeded through high school and increased their drinking, presumably to calm their anxiety. The meaning of alcohol use and the relevant consequences are different for each of these groups. Eccles pointed out that telling the first group of young people that alcohol use would have dire consequences for them might be ineffective because their experiences contradict this message. For them, encouraging designated drivers and other tactics to avoid negative consequences of drinking might be more effective than preaching abstinence, she suggested.

Several workshop presenters emphasized the importance of the larger society when considering choices made by adolescents. A focus on individual adolescent choices can concentrate attention on the individual, blocking out the environmental constraints on behavior (Fischhoff, 1992a; Nisbett and Ross, 1980). The 1993 National Research Council report *Losing Generations: Adolescents in High-Risk Settings* addressed the destructive effects on young people of growing up in neighborhoods with inadequate schools, health care, employment, and other social services. Presenter Gary Barker, research associate at the Chapin Hall Center for Children, University of Chicago, underscored the need to create options for young people in discussing his work in Colombia, South America. In poor neighborhoods in which many 10-year-olds are working to help support their families, a focus on individual decision making might not be as important as providing opportunities for young people to be able to stay in school, for instance. Della Hughes, executive director of the National Network for Youth, reminded participants that young people need to have constructive ways to interact with adults and contribute to the community and that programs can be designed to provide those opportunities. Properly applied, a decision-making perspective begins by describing these constraints, as expressed in the options

available to teenagers and the chances that they have to achieve the goals they seek. Responsible adults can provide teenagers with better options as well as help them choose among them (Fischhoff et al., 1998).

MEDIA INFLUENCES

The media—television, radio, movies, music videos—are part of the social environment in which today's young people grow up, and they can contribute to setting social norms. Presenter Sarah Brown, director of the National Campaign to Prevent Teen Pregnancy, pointed out that young teenagers spend up to seven hours a day watching television and that older teenagers may spend more than seven hours a day listening to the radio and CDs or watching music videos. There is a tremendous amount of sexual innuendo and sexual activity portrayed in the media, and most of that sexual activity is between unmarried people, according to Brown. In her research, presenter Monique Ward, assistant professor of psychology at the University of Michigan, found that 29 percent of interactions between television characters is sexual in nature (Ward, 1995). She pointed out that drinking permeates television, with 70 percent of prime time network shows portraying at least one instance of alcohol consumption. There is also some indication that the portrayal of cigarette smoking is on the increase both in movies and on television (Klein et al., 1993; Terre et al., 1991). Little research has been done to document the effect of media portrayals of sexual behavior or alcohol, tobacco, and drug use on the behavior of teenagers. Ward has found some evidence that the media may influence social norms. Her research found that young adults who watch television shows with high sexual content, such as nighttime soap operas and music videos, tend to have more liberal sexual attitudes and to believe their peers are more sexually active than do those who do not watch such shows.

Advertisers spend millions of dollars trying to influence product purchases. A number of studies have shown that tobacco advertising and promotional activities may encourage young people to begin and to continue smoking (Centers for Disease Control and Prevention, 1992, 1994; Pierce et al., 1991, 1998). Pierce and colleagues (1998) estimated that 34 percent of teenage experimentation with cigarettes in California between 1993 and 1996 could be attributed to cigarette advertising and promotional activities (e.g., distribution of t-shirts and other items with cigarette logos).

The media may also be used to present positive messages. The Partnership for a Drug-Free America tries to use advertisers' information about influencing teenagers to create messages that discourage drug use. Presenter Sean Clarkin, senior vice president and deputy director of creative development at the Partnership for a Drug-Free America, explained the partnership's work and expanded on the discussion of the kinds of messages that might reach young people and affect their decisions. The partnership has held numerous focus groups with adolescents, follows research on adolescent attitudes and drug use, and conducts its own

annual national study, the Partnership Attitude Tracking Study. From its focus groups and surveys, the partnership believes that no single message will be effective with all teenagers, so its goal is to have a variety of messages. Clarkin indicated that for youngsters who have not yet engaged in drug use and are not interested in trying drugs, messages that emphasize the positive aspects of remaining drug free appear to be the best way to encourage them to remain so. For teenagers who are undecided about whether to try drugs, the partnership thinks that messages that emphasize the risks of drug use seem to be most effective. Echoing a point made by presenter Robert Denniston, director of the Secretary's Initiative on Youth Substance Abuse Prevention in the U.S. Department of Health and Human Services—Clarkin said the risks portrayed must be believable to the youngsters, must be concrete and immediate, and must focus on social risks, rather than health or legal risks.

Other participants raised the issue of including prosocial messages in entertainment programming and not just in public service announcements. One participant pointed to a story line on the TV program *Beverly Hills 90210* several years ago that portrayed a character using good decision-making techniques in deciding whether or not to begin having sex. Another mentioned that the effect of health-related themes on shows such as *ER* is being studied by the Kaiser Foundation. Clarkin noted that periodic attempts are made to interest Hollywood producers in including more prosocial messages, but that these attempts meet with mixed results.

PROGRAMS FOR ADOLESCENTS

To what extent do programs designed to prevent young people from engaging in risky behaviors incorporate aspects of decision-making skills? Several program designers and evaluators addressed this matter at the workshop.

Research on programs to prevent drug use has found that programs that focus only on information about drugs do not work, according to presenter Mary Ann Pentz, director of the Center for Prevention Policy Research at the University of Southern California. Neither do programs that focus on feelings or building self-esteem have any effect on drug use. Pentz indicated that what has been found to work are long-term programs designed to counter social influences (Johnson et al., 1990; MacKinnon et al., 1991; Pentz and Trebow, 1991; Pentz et al., 1989a). These effective programs begin in elementary or middle school and are supplemented by booster sessions throughout the high school years. The general strategies that are used in such programs are:

- peer opinion leaders to assist in program delivery;
- active social learning methods, involving role plays, behavioral rehearsal, and group discussion; and
- inclusion of parents through homework and other activities.

Similar results have been found by Botvin (1995, 1996, 1997) for smoking prevention programs. He notes that "nearly two decades of careful research amply demonstrate . . . that the most effective approaches for preventing adolescents from starting to smoke are those that are implemented in school settings and target psychosocial causes of smoking initiation. These approaches teach middle/junior high school students the skills needed to resist social influences to smoke (especially from peers and the media), promote antismoking norms, and, in some cases, teach general life skills to enhance overall personal competence" (Botvin, 1997:47). Botvin also stressed the importance of booster sessions to maintain the program effects.

In the STAR program, which Pentz has been directing and evaluating over the past 14 years (Pentz et al., 1989b), the school-based social influences program beginning in middle school is supplemented by a mass media program to reinforce the messages for prevention. The evaluation has tracked young people from the STAR program and a control group through their early twenties. Program participants were found to have significantly less drug use than the control group both at the end of high school and at age 23. Even though the program dealt only with drug use, program participants also exhibited fewer unintended pregnancies, dropped out of school less, and were more likely to be employed at age 23 than the control group. Skills learned for drug abuse resistance may have been translated to resisting other problem behaviors. Although the program did not explicitly use a decision-making model, many aspects of the program may actually incorporate decision-making skills that are transferable to a variety of domains. Such programs can include decision-making skill building by providing information that teenagers need for effective decision making in a clear and personalized way; by encouraging teenagers to take responsibility for their actions and to analyze their options; and by showing adolescents how to discuss decisions in a group setting. Indeed, many social skills training programs include explicit decision-making modules (Baron and Brown, 1991).

Presenter Richard Catalano, professor and associate director of the Social Development Research Group at the University of Washington, stressed that programs should seek to encourage positive youth development through risk reduction and protective factor enhancement (see, for example, Catalano et al., 1998). Both youth development practitioners and prevention scientists have called for a broader focus in youth programs because:

- the same risk and protective factors may predict various problems, so it would seem to be more efficient to focus on common etiologies rather than individual problems;
- risk and protective factors may be found in the environment as well as in the individual, but single-problem-focused programs have focused mainly on the individual;

- developmental needs, processes, and tasks should be taken into account in program design, but they are often overlooked in single-problem-focused programs; and
- as youth development practitioners have pointed out, problem-free behavior does not mean that a young person is well prepared or healthy, but promoting positive development focuses on enhancing protective factors and preparing a young person to be a contributing, healthy citizen.

Presenter Richard Murphy, director of the Center for Youth Development and Policy Research, seconded the importance of emphasizing positive youth development over problem behaviors.

Catalano and colleagues at the University of Washington's Social Development Research Group have been studying evaluations of both youth development and prevention programs that take a youth development approach. The programs that show behavioral change tend to include programming in more than one domain (i.e., school and family, school and community, family and community). Almost all of these programs promoted social or emotional competencies by promoting social skills, decision-making skills, self-management skills, refusal or resistance skills, and coping strategies. Effective programs promoted positive social norms and provided both recognition for positive behavior and opportunities for prosocial involvement. Over half of these programs promoted bonding to prosocial adults in family and schools. These programs also lasted at least nine months and had mechanisms for ensuring implementation quality. Most of these programs were successful in both promoting positive behavior and preventing problem behaviors.

At the federal level, government agencies have a number of ongoing efforts to address high-risk behavior among young people. Lloyd Kolbe, director of the Adolescent and School Health Division of the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), described strategies that CDC has put into place to try to bridge research findings and program practice. The first strategy is to identify and monitor critical health events, policies, and programs. This strategy includes using surveys, such as the Youth Risk Behavior Survey, to collect national and state-level data on the involvement of young people in high-risk behaviors, such as drug use, alcohol use, tobacco use, and unprotected sex. Collecting information on program implementation and effectiveness, through efforts such as a school health policy and program surveillance system, is another aspect of CDC's information collection strategy. A second CDC strategy is pooling research in order to ensure better dissemination. CDC is also committed to strategies to enable local institutions to implement and evaluate prevention programs.

Denniston described other Department of Health and Human Services efforts, in particular efforts by the Substance Abuse and Mental Health Services Administration (SAMHSA) to use research to inform their efforts. In particular,

there is an emphasis on the evaluation of programs so that only effective prevention programs are encouraged at the local level. Five regional Centers for the Application of Prevention Technology have been established to assist states that have been awarded incentive grants to use various funding streams to implement programs with documented effectiveness. SAMHSA is also involved in promoting consistent messages about substance abuse, not only in mass media, but also from churches, schools, parents, and community organizations. Denniston stressed that these messages should be tailored to the concerns of young people, by focusing on social and legal risks, not just long-term health risks, which may seem too far removed to be of consequence to adolescents. For example, some antismoking messages try to portray a social risk of smoking by likening kissing a smoker to licking an ashtray. Denniston noted that the Office of National Drug Control Policy planned to launch an $185 million antidrug media campaign in 1998.

ISSUES FOR YOUTH PROGRAMS

Although the focus of successful youth programs has not been on decision-making skills per se, participants noted that aspects of decision making appear in many of the programs. Research has yet to answer how best to incorporate decision making into prevention programs, what decision-making skills should be taught and in what context, and how these skills should be taught. Although many questions remain to be answered, a number of issues surfaced during the workshop that may be relevant to designing and implementing programs for young people.

One theme concerned dealing with emotions. As Larson pointed out, adolescents experience frequent strong emotions. Adolescents could be taught about the ways in which emotions can affect their thinking and therefore their behavior. Learning to recognize the effects of emotion might help some young people make better decisions. Conversely, helping adolescents to think their way through to better decisions might reduce their reliance on emotion.

Another theme related to the promotion of self-esteem in programs for young people. Some participants warned that there may be a negative side to increasing young people's sense of self-esteem. Adolescents (like adults) can get into trouble if they overestimate their capabilities and knowledge. People who are confident that they know something (whether they actually do or not) are unlikely to seek more information and therefore may not have the information they need to make good decisions. Increasing one's self-esteem may increase one's sense of confidence in one's knowledge, thereby limiting the search for new information—an important component of good decision making.

Several themes emerged about the kinds of messages that need to be delivered to young people, both in prevention and youth development programs and in media messages. A number of participants noted that adolescents often believe

that more of their peers are engaging in drugs, smoking, and sex than really are doing so. This misperception may encourage some youngsters to try risky behaviors because they perceive that everyone is doing it. Providing accurate information about the number of young people who are engaging in risky behaviors (which is usually much smaller than adolescents think) may be important both in prevention programs and in prevention-oriented media messages. A related theme is the importance of the consequences of avoiding risky behaviors to young people themselves, not just the consequences of engaging in such behaviors. Young people may fear the social consequences of saying no more than they fear the long-range health risks. Several participants stressed the importance of knowing the context surrounding the risky behavior and targeting programs and messages to the meaning of the behavior for different groups of young people.

Programs and messages also may need to take into account the fact that adolescents distinguish between experimental substance use or risky behavior and regular substance use or risky behavior. Even though they may be aware of the dangers inherent in regular use or behavior, they may make decisions about engaging in a behavior as if it were a one-time thing. Messages may need to be tailored to teaching young people about the real dangers inherent in experimental use or one-time behaviors.

Many participants questioned the options available to adolescents and suggested that it may not be adolescents who are the problem, but the social context in which they live. Presenter Ann Masten, professor of child psychology at the University of Minnesota, discussed the need to understand what makes some young people more resilient than others in adverse situations and why these resilient individuals seem to make choices that improve their options. Studying these individuals might help program developers better understand protective factors. Decision-making skills may well be one of those factors.

In his closing comments, Baruch Fischhoff returned to the issue of looking at adolescent decision making through the lens of behavioral decision theory. He noted that this primarily cognitive approach needs to be supplemented with the sort of social and affective perspectives represented at the workshop. Nonetheless, a decision theory perspective can help teenagers to make better decisions and give them better decisions to make. This perspective can help identify the information that is most relevant to teenagers' decisions. A behavioral decision-making perspective also provides a way to characterize the difficulty of the decisions that teenagers face and to identify cases in which they need better options—not just better information or inspiration. Good decision-making skills should provide teenagers with the sort of general protective skill that was emphasized by many workshop presenters. Moreover, it is a skill that respects teenagers, honoring their desire for growth and independence.

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